Urban Native Flora and Noteworthy Bee Species: Bridgeport, CT

James Durrell[1], Tracy Zarrillo[2], Kimberly Stoner[2], William Landesman[1], Kathleen Engelmann[1]
University of Bridgeport, Department of Biology[1]
The Connecticut Agricultural Experiment Station, Department of Entomology[2]

Introduction

The economic value of bees and other pollinators in the United States, as a whole, is estimated to be approximately $3 billion per year. Bees in urban matrixes provide crucial pollination services to urban community farms and gardens. The decline of notable bee species (*A. mellifera, B. affinis, B. terrnarius*) has prompted the expansive initiative of determining conservation status of all bee species. Urban areas have long been under-sampled, especially for bees, which surprisingly sometimes can provide refuge for insects. urban bee communities, and the flora they use for brood provisioning and nutrition, is not well understood.

Here, we present several notable bee species and floral interactions observed in Bridgeport, Connecticut across multiple flight seasons.

Methodology

2015 and 2016 Sites – Beardsley Zoo

- Bees were collected biweekly using multicolored pan traps (bee bowls). Traps were deployed early April to September

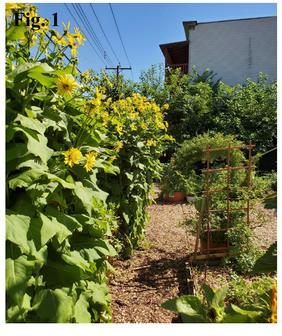
2018 Sites – University of Bridgeport (UB)

- Bees were collected biweekly using multicolored pan traps (bee bowls). Traps were deployed mid June to September

2020 Sites – Green Village Initiative (GVI) & UB

- Alternated GVI and UB sites weekly, bees were collected two times per week (bees were not collected if weather was poor) by 24-hour bee bowls and 5-min sweep netting per flowering plant species.

All specimens were identified using DiscoverLife or Gibbs (2011)



Left (Fig. 1): GVI community garden
Right (Fig. 2): Bee bowl at GVI community garden

Noteworthy Bee Species

Table 1. Species	Floral Record (2020)	Possible New Record (compared with Discoverlife records)
Triepelous remigatus (Fabricius, 1804)	*Coranidrum sativum, Silphium laciniatum*	Two new floral records
Triepelous lunatus (Say, 1824)	*Agastache foeniculum*	One new floral record; very few records in CT although many in NY
Bombus fervidus (Fabricius, 1798)	*Vicia sativa*	One new floral record; thought to be declining
Lasioglossum zonulum (Smith, 1848)	*N/A*	County record for Fairfield county. Less than 5 previous captures in CT
Hoplitis producta (Cresson, 1864)	*N/A*	Last county record was over 10 years ago
Hoplitis pilosfrons (Cresson, 1864)	*N/A*	Last county record was over 10 years ago
Heriades carniata (Cresson, 1864)	*Daucus carota*	One new floral record; last county record was over 10 years ago

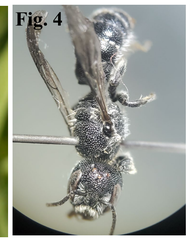


Fig. 3 - left (*T. lunatus*)
Fig. 4 - middle (*H. carinata*)
Fig. 5 - right (*B. fervidus*)

Bee Nesting Substrate Preference

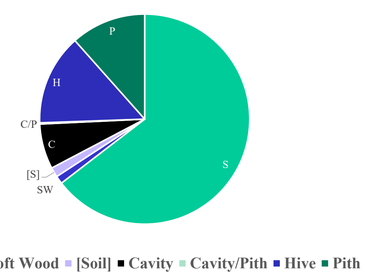


Fig 6. Pie chart depicting the composition of nesting substrate preference of sampled urban bees species (excludes species still undetermined) [all years]

Bees by Behavior

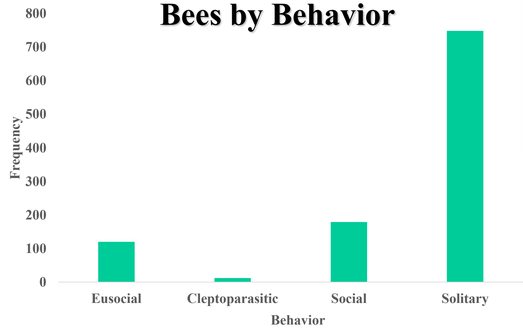


Table 2. Bar plot depicting behavior of collected bees. Majority are solitary bees [all years].

Bee Relative Abundance and Cumulation Percent

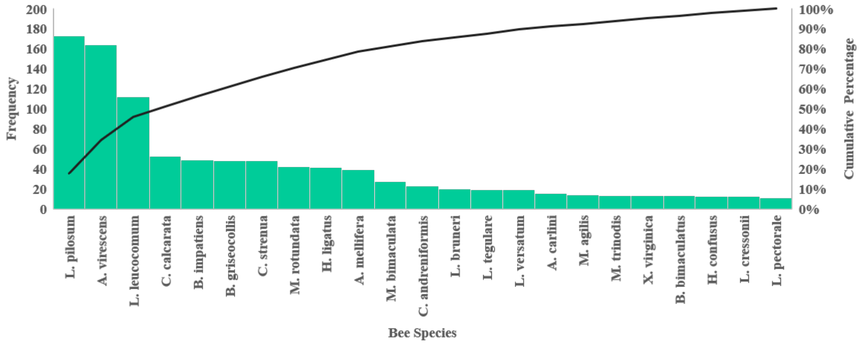


Table 2. Pareto chart of collected bee species (excluding species with 10< captures) Note the majority of all bees captured are *L. pilosum, L. leucocomum,* and *A. virescens* [all years].

Native, Exotic and Ornamental Floral Influence on Urban Bees

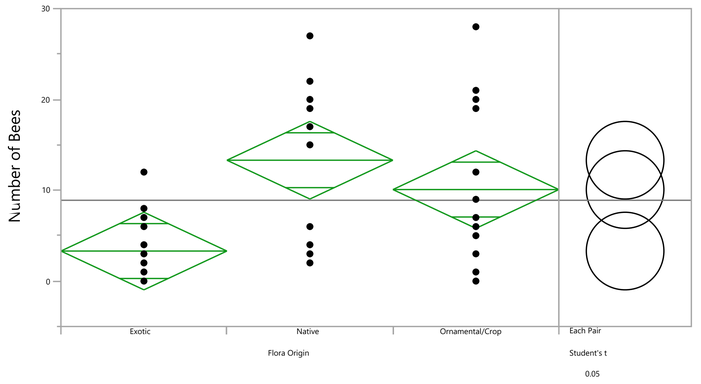


Table 4. Anova oneway analysis of flora origin (native, exotic, ornamental/crop) by bee captures (2020 data). Native and ornamental/crop flora could impact urban bee communities more so than exotic (chiefly comprised of weeds in this study). P-value: 0.0062*

Conclusion

- This study yielded ~ 58 bee species across ~1400 collected individuals (full data not shown here).
- Urban areas need to be sampled more to obtain a better understanding of bee communities and their floral associations.
- This study possibly yielded several bee county records and newly documented floral associations
- Native and ornamental/crop appear to influence urban bee communities more so than exotic (weeds)
- Further sampling efforts should continue to focus on the intersection of urban wastelands and community/pollinator gardens while using sweep netting to obtain more floral associations.

Acknowledgements

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